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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/601,875	10/12/2000	Michifumi Tanga	TANGA2	5274

1444 7590 05/27/2003

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EXAMINER	
FORMAN, BETTY J	
ART UNIT	PAPER NUMBER
1634	

DATE MAILED: 05/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/601,875	TANGA ET AL.	
	Examiner	Art Unit	
	BJ Forman	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 January 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,6-16 and 22-41* is/are pending in the application.

4a) Of the above claim(s) *12 and 26-38* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1,2,6-11,13-16,22-25 and 39-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

FINAL ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 27 January 2003 has been entered.

2. This action is in response to papers filed 27 January 2003 in which claims 1-2, 6-11, 13 and 16 were amended, claims 4 and 5 were canceled and claims 39-41 were added. All of the amendments have been thoroughly reviewed and entered. The previous rejections in the Office Action dated 28 October 2002 under 35 U.S.C. 102 (b) are withdrawn in view of the amendments. The previous rejections under 35 U.S.C. 103(a) are maintained.

All of the arguments have been thoroughly reviewed and are discussed below.

New grounds for rejection necessitated by amendment are discussed.

Claims 1-2, 6-11, 13-16, 22-25, 39-41 are under prosecution.

Specification

3. The amendment filed 27 January 2003 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

Independent claims 1, 13 and 16 have been amended to recite methods of making the substrate including:

> "wherein the surface of the chip is modified by binding a chloride by irradiating the chip with ultraviolet light in an atmosphere of chlorine gas, and replacing the chloride by a hydroxyl radical by dipping the chip into a boiling alkali solution or steam, or by binding an amino-radical by irradiating the chip with ultraviolet light in an atmosphere of ammonia gas, or by binding a carboxyl radical by dipping the chip into a solution containing a carboxyl radical or an epoxy radical."

Applicant cites page 7, lines 6-20 for support for the newly added limitations. However, the cited passage does not provide support for the amendments.

> "On the other hand, in the case of removing produced chemical modification by hydrolysis and reproducing, it is preferable that a radical in which carboxyl radical is connected to a terminal end of the above hydrolysis radical is connected to a surface of a substrate through an ester linkage so as to provide hydrolysis characteristic in alkaline solution. As a method for linking a hydroxyl radical connected to a terminal end of the hydrocarbon radical to a surface of a substrate, it can be considered a method for oxidizing a surface of a substrate with oxygen plasma and then steaming, a method for chlorinating a surface of a substrate by irradiating ultraviolet light in chlorine gas and then hydrogenating in alkaline solution and a method for oxidizing a surface of a substrate with oxygen plasmas chlorinating and then hydrogenating in alkaline solution."

The cited passage teaches ester linkage between a carboxyl radical and the substrate; linking a hydroxyl radical connected to the end of a hydrocarbon radical to a surface of a substrate via oxidizing a substrate surface with oxygen plasma and then steaming; chlorinating a substrate surface via irradiating ultraviolet light in chlorine gas and then hydrogenating in alkaline solution; and oxidizing a substrate surface with oxygen plasma, chlorinating and then hydrogenating in alkaline solution.

However, the cited passage does not teach or provide support for the newly claimed "replacing the chloride by a hydroxyl radical by dipping the chip into a boiling alkali

solution..... or by binding an amino-radical by irradiating the chip with ultraviolet light in an atmosphere of ammonia gas, or by binding a carboxyl radical by dipping the chip into a solution containing a carboxyl radical or an epoxy radical".

4. Claim 6 has been amended to recite "diamond-like carbon". However, the specification as originally filed fails to provide support for the amendment.

The specification teaches:

As an example of good thermal conductivity material, diamond, metals such as silver, copper, aluminum, tungsten, molybdenum and so on can be considered. Ceramic such as alumina, aluminum nitride, titanium carbide, silicon carbide, silicone and so on can be also considered. Materials mixed with the above described material and ceramic can be also suitable. Further, plastic material such as polycarbonate and fluorine resin can be suitable. If material is chemically suitable, the other materials may be suitable in addition to the above described metal, ceramic and plastic. For example, diamond and diamond-like can be suitable. Material mixed with plastic and the above described metal, ceramic and diamond can be suitable. As a material of a substrate made of diamond, synthetic diamond, high pressurized synthetic diamond or natural diamond can be utilized. These kinds of diamond may have monocrystal substance or polycrystal substance. In view of productivity, diamond produced by a vapor phase composite method such as microwave plasma CVD method is preferable. (page 4-5).

However, the specification fails to teach or provide support for the newly claimed "diamond like carbon".

As such, the amendments introduce new matter in to the specification.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-2, 6-11, 13-16, 22-25, and 39-41 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The recitation "wherein the surface of the chip is modified by binding a chloride by irradiating the chip with ultraviolet light in an atmosphere of chlorine gas, and replacing the chloride by a hydroxyl radical by dipping the chip into a boiling alkali solution or steam, or by binding an amino-radical by irradiating the chip with ultraviolet light in an atmosphere of ammonia gas, or by binding a carboxyl radical by dipping the chip into a solution containing a carboxyl radical or an epoxy radical " is added to the newly amended independent claims 1, 13 and 16 (from which all claims depend).

The recitation "diamond-like carbon" is added to newly amended claim 6. While the specification teaches diamond and synthetic diamond and diamond-like . The specification failed to support the newly claimed "diamond-like carbon".

Therefore, as detailed above, the specification fails to define or provide any disclosure to support the newly claimed recitations.

MPEP 2163.06 notes "IF NEW MATTER IS ADDED TO THE CLAIMS, THE EXAMINER SHOULD REJECT THE CLAIMS UNDER 35 U.S.C. 112, FIRST PARAGRAPH - WRITTEN DESCRIPTION REQUIREMENT. *IN RE RASMUSSEN*, 650 F.2D 1212, 211 USPQ 323 (CCPA 1981)." MPEP 2163.02 teaches that "Whenever the issue arises, the fundamental factual inquiry is whether a claim defines an invention that is clearly conveyed to those skilled in the art at the time the application was filed...If a claim is amended to include subject matter, limitations, or terminology not present in

the application as filed, involving a departure from, addition to, or deletion from the disclosure of the application as filed, the examiner should conclude that the claimed subject matter is not described in that application." MPEP 2163.06 further notes "WHEN AN AMENDMENT IS FILED IN REPLY TO AN OBJECTION OR REJECTION BASED ON 35 U.S.C. 112, FIRST PARAGRAPH, A STUDY OF THE ENTIRE APPLICATION IS OFTEN NECESSARY TO DETERMINE WHETHER OR NOT "NEW MATTER" IS INVOLVED. *APPLICANT SHOULD THEREFORE SPECIFICALLY POINT OUT THE SUPPORT FOR ANY AMENDMENTS MADE TO THE DISCLOSURE*" (emphasis added).

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 2, 9-11, 13-16 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Chrisey et al (U.S. Patent No. 5,688,642, issued 18 November 1997) as defined by Sumiya et al (U.S. Patent No. 5,332,629, issued 26 July 1994).

Regarding Claim 1, Chrisey et al teach a solid state substrate for DNA immobilization (i.e. diamond) (Column 7, lines 24-28), wherein said substrate has a thermal conductivity ration of at least 0.1W/cm ° K as defined by Sumiya et al (Column 1, Table 1) wherein the surface of the substrate is modified by binding a chloride or hydroxyl radical (Column 7, lines 35-50) and wherein said substrate is used for immobilizing and amplifying DNA (Column 9, lines 22-27) wherein the substrate has a polar radical at a terminal on the surface of the substrate (Column 7, lines 35-50 and Fig. 4-5) and wherein said polar radical is hydroxyl radical, epoxy radical or amino radical (Column 7, lines 35-50).

The recitation "for amplifying DNA" in the preamble of Claim 1and the recitation "for amplifying and immobilizing DNA" in lines 3-4 of Claim 1 are recitations of intended use for the claimed substrate. The courts have stated that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). The intended use of the claimed substrate does not differentiate the claimed apparatus over the substrate of Chrisey et al.

The claim further recites the method steps by which the substrate is made. However, the courts have stated that "even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) see MPEP 2113. In the instant case, the substrate of Chrisey et al provides the polar radical at the substrate surface as claimed. Therefore, because Chrisey et al disclose the structural components of the substrate which define the claimed substrate (product), the instantly claimed is the same as that of Chrisey et al.

Regarding Claim 2, Chrisey et al teach said substrate is diamond (Column 7, lines 24-28).

Regarding Claim 9, Chrisey et al teach said substrate wherein said polar radical is an epoxy radical and said epoxy radical is introduced to a surface of said substrate with a silane coupling agent (Column 7, lines 41-43).

Regarding Claim 10, Chrisey et al teach said substrate wherein said polar radical is an amino radical and said amino radical is introduced to a surface of said substrate with a silane coupling agent (Column 7, lines 45-51).

Regarding Claim 11, Chrisey et al teach said chip wherein DNA is immobilized to said substrate (Column 3, lines 20-25 and Column 7, lines 21-28).

Regarding Claim 13, Chrisey et al teach a solid state substrate having DNA immobilized thereon wherein said substrate is diamond and is chemically modified by binding a chloride or hydroxyl radical (Column 7, lines 21-50) and wherein said substrate is used for immobilizing and amplifying DNA (Column 9, lines 22-27). Chrisey et al do not teach the surface of the substrate is roughened. However, substrates having a roughened surface were well known in the art at the time the claimed invention was made as taught by Fodor et al (Column 37, line 65-Column 38, line 6). Specifically, Fodor et al teach a similar substrate for DNA immobilization wherein the substrate is modified by binding a hydroxyl radical (Column 37, lines 42-64 and Columns 43-44) and wherein the surface of the substrate is roughened (i.e. machined or etched) thereby increasing the surface area and increasing the density of reagent attachment (Column 37, line 65-Column 38, line 6). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the substrate surface of Chrisey et al by roughening the surface as taught by Fodor et al to thereby increase surface area of the substrate for the obvious benefits of increasing the density of reagent attachment and regent-binding as taught by Fodor et al (Column 37, line 65-Column 38, line 6).

Regarding Claim 14, Chrisey et al teach said substrate having DNA immobilized thereon wherein said substrate has a polar radical at a terminal of the surface of the substrate (Column 7, lines 41-50).

Regarding Claim 15, Chrisey et al teach said substrate wherein said polar radical is hydroxyl radical, epoxy radical or amino radical (Column 7, lines 35-50).

Regarding Claim 16, Chrisey et al teach their chip is for amplifying and immobilizing DNA (Column 9, lines 9-27).

The recitation "for amplifying and immobilizing DNA" is functional language and does not describe the claimed substrate in terms of structure. The courts have stated that claims drawn to an apparatus must be distinguished from the prior art in terms of structure rather than function see *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA1959). "[A]pparatus claims cover what a device is, not what a device does." Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525,1528 (Fed. Cir. 1990) (see MPEP, 2114). Because "for amplifying and immobilizing DNA" does not describe structural components of the claimed substrate, the recitation does not distinguish the substrate over the prior art substrate.

Regarding Claim 25, Chrisey et al teach the substrate of Claim 15 wherein said polar radical is an epoxy radical and said epoxy radical is introduced to a surface of said substrate with a silane coupling agent (Column 7, lines 41-43).

Response to Arguments

9. Applicant argues that the substrates of Chrisey et al require organosilanes on the surface while the instantly claimed invention does not require the organosilanes of Chrisey et al.

The argument has been considered but is not found persuasive because the claims are drawn to a produce i.e. a solid state substrate wherein said substrate has a thermal conductivity ration of at least 0.1W/cm ° K as defined by Sumiya et al (Column 1, Table 1) wherein the surface of the substrate is modified by binding a chloride or hydroxyl radical (Column 7, lines 35-50) and wherein said substrate is used for immobilizing and amplifying DNA (Column 9, lines 22-27) wherein the substrate has a polar radical at a terminal on the surface of the substrate (Column 7, lines 35-50 and Fig. 4-5) and wherein said polar radical is hydroxyl radical, epoxy radical or amino radical (Column 7, lines 35-50).

The instant claims require a substrate having a thermal conductivity of least 0.1W/cm ° K and modified by a polar radical (i.e. hydroxyl radical, epoxy radical or amino radical) at a terminal of the substrate wherein said polar radical is. The substrate of Chrisey et al meets the claimed requirements (Column 7, lines 24-50). The fact that Chrisey et al substrate comprises organosilane does not negate the fact that Chrisey et al disclose the substrate as claimed.

Furthermore, the newly added method steps do not distinguish the instantly claimed substrate over the teaching of Chrisey et al because as stated above, the courts have stated that "even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) see MPEP 2113. In the instant case, the substrate of Chrisey et al provides the polar radical at the substrate surface as claimed. Therefore, because Chrisey et al disclose the structural components of the substrate which define the claimed substrate (product), the instantly claimed is the same as that of Chrisey et al.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having

ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chrisey et al (U.S. Patent No. 5,688,642, issued 18 November 1997)as defined by Sumiya et al (U.S. Patent No. 5,332,629, issued 26 July 1994) in view of Fodor et al (U.S. Patent No. 5,800,992, issued 1 September 1998).

Regarding Claims 39-41, Chrisey et al teach a solid state substrate for DNA immobilization (i.e. diamond) (Column 7, lines 24-28), wherein said substrate has a thermal conductivity ration of at least 0.1W/cm ° K as defined by Sumiya et al (Column 1, Table 1) wherein the surface of the substrate is modified by binding a chloride or hydroxyl radical (Column 7, lines 35-50) and wherein said substrate is used for immobilizing and amplifying DNA (Column 9, lines 22-27) wherein the substrate has a polar radical at a terminal on the surface of the substrate (Column 7, lines 35-50 and Fig. 4-5) and wherein said polar radical is hydroxyl radical, epoxy radical or amino radical (Column 7, lines 35-50).

Chrisey et al do not teach the surface of the substrate is roughened. However, substrates having a roughened surface were well known in the art at the time the claimed invention was made as taught by Fodor et al (Column 37, line 65-Column 38, line 6). Specifically, Fodor et al teach a similar substrate for DNA immobilization wherein the substrate is modified by binding a hydroxyl radical (Column 37, lines 42-64 and Columns 43-44) and wherein the surface of the substrate is roughened (i.e. machined or etched) thereby increasing the surface area and increasing the density of reagent attachment (Column 37, line 65-Column 38, line 6). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the substrate surface of Chrisey et al by roughening the surface as taught by Fodor et al to thereby increase surface area of the substrate for the obvious benefits of increasing the density of reagent attachment and regent-binding as taught by Fodor et al (Column 37, line 65-Column 38, line 6).

Response to Arguments

12. Applicant argues that Fodor et al add nothing to the teaching of Chrisey et al because the instant invention requires that the ultraviolet light be used to couple groups to the surface while Fodor et al uses ultraviolet light to remove protective groups. The argument has been considered but is not found persuasive because as stated above, the courts have stated that "even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) see MPEP 2113. In the instant case, the substrate of Chrisey et al provides the polar radical at the substrate surface as claimed. Therefore, because Chrisey et al disclose the structural components of the substrate which define the claimed substrate (product), the instantly claimed is the same as that of Chrisey et al.

13. Claims 6-8 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chrisey et al (U.S. Patent No. 5,688,642, issued 18 November 1997) in view of Kobashi (U.S. Patent No. 5,77,372, issued 7 July 1998).

Regarding Claims 6-8 and 22-24, Chrisey et al teach a solid state substrate for DNA immobilization (i.e. diamond) (Column 7, lines 24-28), wherein said substrate has a thermal conductivity ration of at least 0.1W/cm ° K as defined by Sumiya et al (Column 1, Table 1)

wherein said substrate is used for immobilizing and amplifying DNA (Column 9, lines 22-27) wherein said substrate is diamond (Column 7, lines 24-28) wherein said substrate is chemically modified by binding a hydroxyl radical to the substrate (Column 7, lines 41-50) wherein said substrate has a polar radical at a terminal on the surface of the substrate (Column 7, lines 35-50 and Fig. 4-5) and wherein said polar radical is hydroxyl radical, epoxy radical or amino radical wherein the polar radical is connected on a surface through an ester linkage, an amide linkage or introduced with a silane coupling agent (Column 7, lines 35-50). Chrisey et al do not teach said polar radical is a carboxyl radical. However, Kobashi teaches a similar a solid state substrate wherein said substrate is chemically modified to have a polar radical at a terminal wherein the polar radical is selected from the group consisting of hydroxyl, carboxyl, epoxy and amino (Column 10, line 63-Column 11, line 11). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the chemical modification of substrates as taught by Chrisey et al by chemically modifying with a carboxyl radical as taught by Kobashi based on the teaching of Kobashi wherein hydroxyl, carboxyl, epoxy and amino radicals function equally as chemical modifiers for diamond surfaces (Column 11, lines 4-11). The courts have stated with regard to chemical homologs that the greater the physical and chemical similarities between the claimed species and any species disclosed in the prior art, the greater the expectation that the claimed subject matter will function in an equivalent manner (see *Dillon*, 99 F.2d at 696, 16 USPQ2d at 1904). Therefore, one of skill in the art would be motivated to chemically modify the substrate of Chrisey et al with a carboxyl radical based on the similar chemical and physical properties of polar radicals taught by Kobashi (Column 10, line 63-Column 11, line 11) because one skilled in the art would have expected the carboxyl radical to function in an equivalent manner. Additionally, the skilled practitioner would have been motivated to modify the diamond substrate of Chrisey et al with a carboxyl radical based on the teaching of Kobashi wherein a

biomolecule is immobilized via carboxyl radical-modification of diamond substrate (Kobashi, Column 10, line 63-Column 11, line 11).

Response to Arguments

14. Applicant reiterates the argument presented above regarding organosilanes. The argument has been considered but is not found persuasive for the reasons stated above.

Applicant further argues that Kobashi et al uses their substrate to detect the presence of biological or chemical compounds and contains a transducer while the instantly claimed is used for DNA amplification and substrate does not require a transducer. The arguments have been considered but are not found persuasive because a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

Furthermore, while the substrate of Kobashi et al comprises a transducer, the transducer does not negate the fact that Kobashi et al provide a substrate chemically modified to have a polar radical at a terminal wherein the polar radical is selected from the group consisting of hydroxyl, carboxyl, epoxy and amino (Column 10, line 63-Column 11, line 11) as instantly claimed. And the skilled practitioner would have been motivated to modify the diamond substrate of Chrisey et al with a carboxyl radical based on the teaching of Kobashi wherein a biomolecule is immobilized via carboxyl radical-modification of diamond substrate (Kobashi, Column 10, line 63-Column 11, line 11).

15. All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

16. No claim is allowed.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (703) 306-5878. The examiner can normally be reached on 6:30 TO 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones can be reached on (703) 308-1152. The fax phone numbers for the organization where this

application or proceeding is assigned are (703) 308-4242 for regular communications and (703) 308-8724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

BJ Forman, Ph.D.
Patent Examiner
Art Unit: 1634
May 21, 2003